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ORIGINAL ARTICLES.

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SYMPATHETIC OPHTHALMIA.—RAPID FAILURE  
OF VISION IN INJURED AND SYMPATHIZING  
EYE.—IMPROVEMENT AFTER ENUCLEA-  
TION, WITH SUBSEQUENT RELAPSE  
AND FINAL PARTIAL RESTORA-  
TION OF VISION.

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BY S. C. AYRES, M.D., CINCINNATI, OHIO.

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HISTOLOGICAL EXAMINATION OF THE EYE.

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**G**LADYS K., aged 7 years, was brought to me for consultation by Dr. J. B. Beckett June 9, 1897. He gave the following history:

The left eye was injured ten weeks ago by a knife blade. The right eye did not become irritable until three weeks ago, and not markedly so until four or five days ago. She suffered but little pain, complaining principally of the intense photophobia. The left eye was found injected, and there is a scar on the lower and inner quadrant at the sclero-corneal junction indicating the point of penetration. The wound has healed with incarceration of the iris. V. = fingers at 6'. Right eye,

marked photophobia, eyeball injected, iris is nearly normal in appearance, but the pupil is rigid and does not dilate, although strong atropine solution is frequently instilled. She can not read, but counts fingers readily at 20'. Dr. Goode advised immediate enucleation of the injured eye, but to this the mother would not consent until my return, two days later. Atropine and hot fomentations were ordered.

Two days later (9th), I saw her, and found that with the injured eye she could barely see shadows of the hand. There was intense photophobia and lachrymation. The iris was discolored and there was deep scleral injection. With the right eye she could only count fingers at 3'. In two days vision had dropped from counting fingers at 20' to 3' in the sympathizing eye, and in the injured eye from counting fingers at 6' to perceiving shadows of the hand. The iris of the right eye was discolored and rigid, responding very slightly to atropine. The injured eye was enucleated the same day.

Five days later (16th), she could count fingers at 15' and the photophobia was very much better.

June 16. Eye more irritable; pupil not so well dilated; photophobia increased. Can not count fingers. After her return home the eye rapidly improved. The photophobia subsided, and on June 26 Dr. B. wrote me that she could count fingers at 24'.

Two or three days after this test was made, while playing with a friend she received a slight injury to the eye from her hand. It was not severe and did not cause much pain, but there was a rapid failure of vision.

I saw her shortly after the accident and the eye was so irritable that it could with difficulty be tested. The iris was discolored. Later on her mother said she lost her sight so completely that she could not recognize objects around her. This acute condition passed off slowly and she regained some vision.

I saw her a few days ago and she could count fingers at 2'; there was a red reflex from the fundus; the iris was free from irritation; tension was normal, and it seems quite probable that the condition of the eye will gradually improve.

## HISTOLOGICAL EXAMINATION OF THE EYE.

Macroscopically the eye, while in formol solution, showed plainly the anterior synechia near the corneo-scleral junction. When æquatorially cut in two halves part of the vitreous body escaped as a thin fluid stained with blood pigment. There was a peripheral detachment of the retina and the papilla appeared swollen. Some of the denser vitreous body adhered to the ciliary body and the posterior surface of the lens, but there was no sign of a cyclitic membrane. When the anterior half of the eyeball was again meridionally cut in two halves, the crystalline lens appeared more spherical than normal. The iris, except at the site of the anterior synechia, was throughout adherent to the anterior lens capsule.

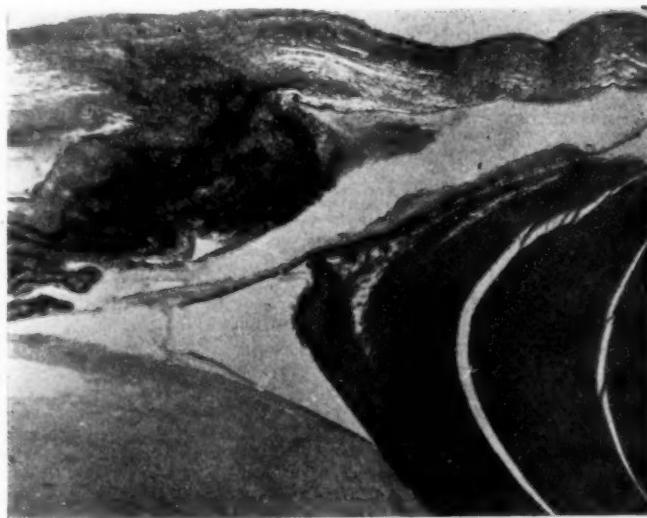


FIG. I.

The microscopical conditions I studied, as I usually do, through the whole eyeball, cutting it partly into meridional, partly into æquatorial sections. In this manner it is not well possible that any important changes can be overlooked.

Besides a slight infiltration with round cells, the corneal tissue shows nothing abnormal, except at the site of the anterior synechia. Here the iris (see Fig. I) and part of the ciliary

body was dragged into the corneal wound and has firmly grown together with the adjacent corneal tissue. There was a small prolapse of the iris tissue which is covered over by a thin layer of corneal epithelium. The adjacent corneal tissue contains new-formed blood vessels and the incarcerated iris tissue as well as the neighboring corneal lamellæ are densely infiltrated with round cells. Schlemm's canal in this part is choked with round cells.

The anterior chamber contains an amorphous coagulated exudation in which a large number of round cells and nuclei are embedded. The endothelium of Descemet's membrane is also covered with one or more layers of round cells which, by their presence, have here and there stimulated the endothelial cells to proliferation and the formation of small cellular protuberances into the anterior chamber.

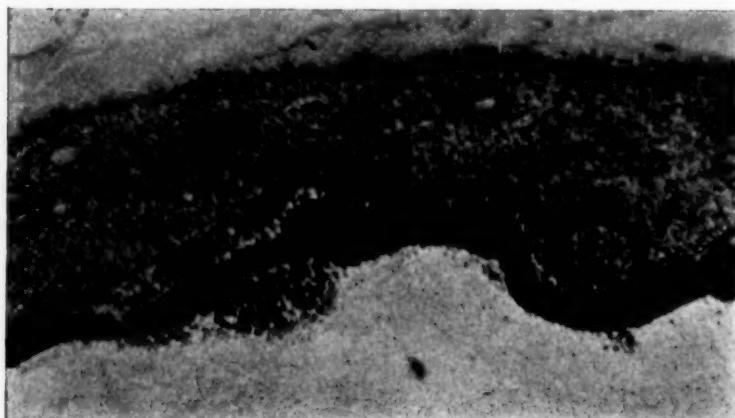


FIG. 2.

The tissue of the iris is throughout filled with round cells. Here and there they form denser tubercle-like accumulations. Its blood vessels are only visible near the anterior surface and those visible show perivasculitis and are empty. The pigment of the iris tissue proper has disappeared. There are bare traces only of the sphincter muscle. The anterior surface of the iris is covered with round cells. The most peculiar change (see Fig. 2) is seen at the posterior surface of the iris. Here the uveal pigment is separated from the iris tissue by a layer of

small cavities divided from each other by pigmented trabeculae. In these cavities lie some round cells; if, besides, they contained some fluid, during life, it was not coagulated and has escaped. Fig. 3 shows this very peculiar condition under a high power in a somewhat oblique section. The trabeculae are formed by the stretched and distorted cells of the layer of pigmented spindle cells which by some are considered to be the dilator muscle of the iris. Treacher Collins and some others have described cysts on the posterior surface of the iris due to

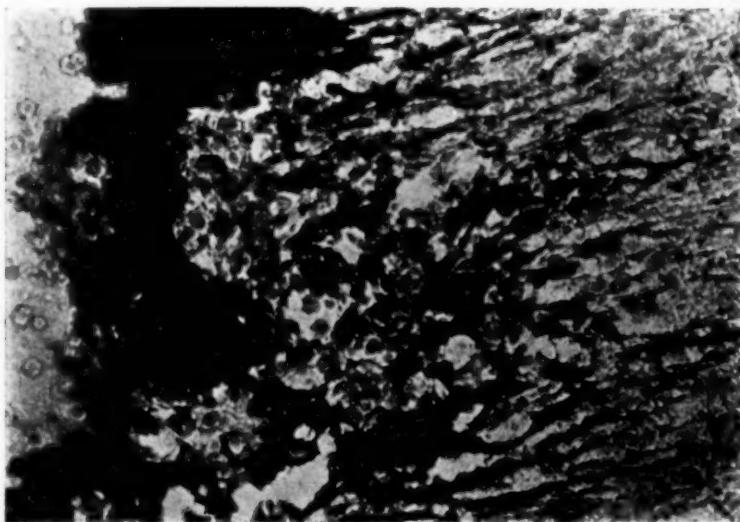


FIG. 3.

a separation of the uveal layer from the rest of the iris by fluid and I have seen similar detachments of this layer. The conditions found in the iris under consideration, which I have seen in one other case, may explain the manner in which these larger cystic cavities may come about through the confluence of the small ones, here depicted. The posterior surface of the iris is glued to the anterior lens capsule in parts by the intervention of a coagulated fibrinous substance filled with round cells. In some parts larger accumulations of round cells directly adhere to the uveal pigment (see Fig. 2).

The ciliary body is in all sections filled with round cells

to such an extent that its muscular elements and blood vessels can barely be recognized. In some places tubercle-like accumulations of round cells are seen. The cells of its retinal layer are not materially altered in the *pars plicata*, but innumerable round cells are seen wandering through them into the interior of the eye. Its processes are thin and atrophic but also contain round cells in great numbers. In the *pars non-plicata* and especially near the ora serrata the retinal layer shows innumerable small detachments, the cells having been lifted off the uveal layer by a fluid which coagulated and is filled here and there with round cells, aided by the shrinking of the vitreous body attached to the fibers of the zonule of Zinn and thus indirectly to the cells of the retinal layer.

The choroid is also everywhere infiltrated with round cells which frequently appear more closely packed in tubercle-like aggregations. Its blood vessels, where visible, contain very little blood.

The fibers of the zonule of Zinn are agglutinated to each other in bundles and tissue of the vitreous body is adherent to them. Numerous round cells adhere to them and lie in the vitreous tissue.

The crystalline lens shows a peculiar condition which I have seen but seldom. Its abnormally spherical shape is due to a withdrawal of the peripheral parts of the lens tissue from the capsule. In this manner a large irregular triangular space between the capsule and the lens tissue is left empty (see Fig. 1). The capsular epithelium reaches to a considerable distance farther back than in the normal condition. This seems to support the theory of O. Becker who thought, in those cases where we find an epithelial layer lining the posterior lens capsule, that in some manner the lens tissue had become loosened from its contact with the posterior lens capsule and thus a space had been formed into which the capsular epithelium could grow. Just such conditions seem to have obtained in the lens under consideration,—at least in the periphery. The lens tissue otherwise shows a number of clefts and here and there drops of Morgagnian fluid, signs of regressive metamorphosis. The anterior capsular epithelium is perfectly regular and shows no sign of proliferation. I do not know, whether a dimness of the lens was perceived during life.

The retina, while at the macroscopical inspection it was

not seen to be detached, except near the ora serrata, is microscopically seen to be everywhere separated from the pigment epithelium by a coagulated exudation of some breadth containing a small number of round cells. The rods and cones are disintegrated anteriorly and perfectly destroyed behind the æquator. The tissue of the retina, and more especially the nerve fiber layer, is filled with round cells. This infiltration becomes denser and denser towards the optic papilla. I could find but few blood vessels in this membrane. Some were empty and apparently unaltered, others showed perivascular and endovascular changes. At and near the papilla optica the membrana limitans interna of the retina is detached to a great extent and pulled into the interior of the eye. No coagulated exudation intervenes.

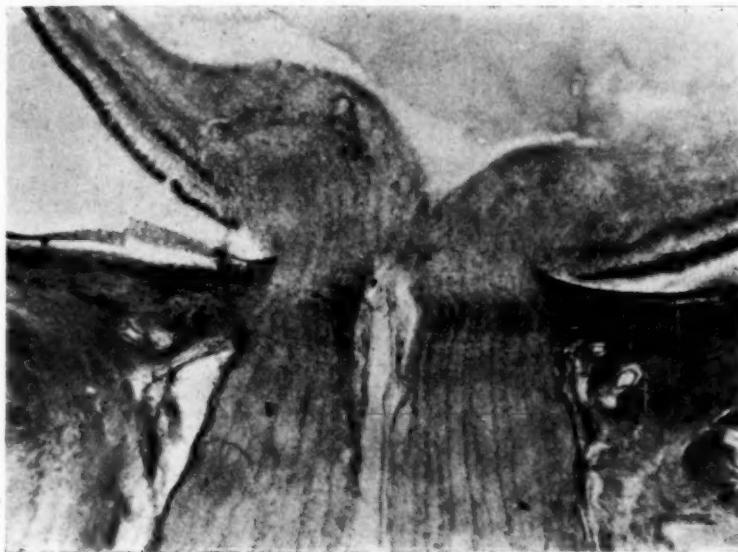


FIG. 4.

The papilla optica (see Fig. 4) and optic nerve show plainly the changes due to severe optic neuritis. The papilla is very considerably swollen and projects into the interior of the eyeball so that the beginning of the retinal tissue proper is pushed some distance from its normal position. Both optic nerve and papilla are choked with round cells, particularly

along their longitudinal pia mater trabeculae. As is seen in Fig. 4, the swelling of the papilla is not equal on both sides of the physiological excavation, neither is the thickness of the optic nerve equal on both sides of the central vessels. While this is, of course, in part due to the unequal distribution of the nerve fibers and therefore not unusual, the conditions in our case are somewhat peculiar, as to the more swollen part of the papilla corresponds an atrophic portion of the optic nerve. This is plainly seen in transverse sections of the latter. The central blood vessels contain no blood; in the central vein a few aggregations of round cells are found.

The dura mater sheath of the nerve seems unaltered, except for a certain amount of round-cell infiltration. The pia mater, however, as far as it reaches, is one mass of round cells.

The elements of the ciliary nerves, which I took particular care to examine where I could find them, show nothing physiological, yet in their passage through the sclerotic, these nerves are also filled with round cells.

The case being comparatively recent and the sympathetic affection of the fellow eye so undoubted, I was in great hopes of being able to find micro-organisms in the tissues of this eye. This seemed the more likely since the character of the round-cell infiltration in the different tissues, as described, showing multitudinous tubercle-like aggregations, resembled so much a microbic inflammation. To this end I stained numerous sections according to various methods for the study of bacteria in tissues, yet again, as at former occasions, I was absolutely unsuccessful. Neither at the seat of the injury, nor in the ciliary body, nor in the pia mater sheath of the optic nerve, in which the inflammation evidently spread backwards towards the brain even more fiercely than in the optic nerve itself, could I find any bacteria. My disappointment was as great as my search for the micro-organisms was ardent.

This case, then, is again one of a series of eyes enucleated for undoubted sympathetic disease of the fellow eye which I have carefully examined. The interesting changes are all due to a severe inflammation of the uveal tract (optic nerve and pia mater sheath). This has led, besides the anterior, to the formation of a posterior synechia of the remainder of the iris, and to secondary shrinkage of the vitreous body which had previously become firmly adherent to the posterior lens

capsule and zonule of Zinn anteriorly and to the optic papilla and retina posteriorly. This shrinkage, I think, led to the formation of the cystic cavities in the posterior layer of the iris, to the minute detachments of the retinal layer of the ciliary body, and to a more gross detachment of the retina throughout, as also to the detachment of the membrana limitans interna of the retina near the papilla. The ciliary nerves share in the general infiltration with round cells.

If, as is likely, microbic infection caused this severe inflammation, these organisms have either wandered beyond their original seat of mischief, or they have found their graves in the very tissues which they attacked and stimulated to such fierce reaction.

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## CATARACT AND CATARACT OPERATIONS.

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### ABSTRACT OF A CLINICAL LECTURE.

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NOW, gentlemen, having talked about cataract extraction, I shall proceed to do the operation before you, commenting as I go along upon the technique that some fifteen years of experience have led me to believe the best and simplest, and upon such difficulties and accidents as may arise. First and foremost you will not operate upon any eye affected with conjunctivitis, lachrymal cystitis or any inflammatory condition. You will cure such condition before operating. Occasionally, this is impossible, but then you operate at your own and the patient's risk and it must be carefully explained to him and his friends. If the anterior chamber is deep, the pupil sensitive, the cataract ripe, the patient tractable and not extremely old, I try always to do the simple operation without iridectomy. It is the ideal operation; the eye is not mutilated and the pupil retains its function. The great danger in this method is prolapse of the iris either immediately or at any time after the operation before the wound lips become agglu-

tinated and the anterior chamber reformed. To avoid this I formerly used instillations of eserine sulphate, both before and after the operation, until I became convinced that the drug favored instead of preventing the accident I desired to escape. In the first place contraction of the pupil renders the delivery of the nucleus more difficult; the iris is bruised and its contractility impaired; more cortex is scraped off and remains behind in the chamber in the passage of the nucleus through the contracted pupil. This is particularly unfortunate as it gets behind the iris, and the pupil having contracted as the aqueous escaped, and there being no coloboma, it is very difficult to get it out. In the second place you must remember that the contraction of the pupil is only relatively strong and particularly in old people in whom the iris has always lost much of its elasticity and muscular strength. No matter how well contracted the pupil may be by the drug therefore, the iris by its action is merely spread into a smooth sheet; not held in this position as though cut from a piece of stiff note paper, but spread as though cut from delicate tissue-paper, and a very slight force from behind is sufficient to dislocate it from its position. But by contracting the pupil and spreading out the iris in this way we have arranged to expose it in the most favorable way to pressure from behind. For you must remember that the aqueous finds its way into and out of the anterior chamber around the edge of the lens, down the posterior surface of the iris, out through the pupil and up to the corneo-iritic angle where it finally escapes. Now when a peripheral cut exists in the cornea the fluid, impelled by the elastic tension of the eyeball, tends to find its way in a direct line from the lens-edge (ciliary body) to the cut and if the pupil is contracted and the iris spread out across the line of flow it is certainly in the best position to be carried into and involved in the cut, and my experience with eserine undoubtedly confirms this reasoning, which you will find very clearly set forth in the text-book of Fuchs, *Per contra*, since I have adopted the use of atropine, in the form of a 2 per cent. solution, instilled the day before, immediately before and immediately after the operation, I have had much fewer prolapses and more satisfactory results. The iris, contracted to the narrowest possible band, is much less apt to be washed into the cut by the escaping aqueous, and of course iritis is much less apt to occur than

when the membrane is expanded by eserine. A consideration of no small moment, too, is the favorable position for occlusion by inflammatory products and all post-inflammatory accidents when the pupil is contracted, while iritis is little to be dreaded and its consequences almost *nil* if we can only keep the pupil widely dilated. I am done with eserine in cataract extraction; while I prepare for, begin and end the operation with atropine, seeking always to obtain the widest dilatation possible. Next in importance, in the endeavor to avoid prolapse, to the choice of a mydriatic or myotic, is the choice of position for the corneal section. If the section is too far back, in the sclera, behind the apparent margin of the cornea, you are almost certain to have prolapse. In endeavoring to avoid this the section is made well within the limbus, in the substance of the cornea itself, and the chances are that the pupillary border or the middle portion of the iris will be washed into the wound and become entangled, if not actually prolapsed. This is my experience, though many excellent operators advise this position. The great objection that I find, however, greater than the danger of immediate entanglement, is that the wound is removed from the main source of corneal nutrition, the peri-corneal vessels, and instead of getting immediate union, you have a wound that may leak for days and days. This of course invites prolapse and renders some entanglement almost inevitable. After two or three cases, in which I had a long fight with leaking wounds, entangled iris, superinduced iritis, and its consequences, occlusion with subsequent iridotomies, I gave up making my cut in the corneal substance. Such wounds are most liable to suppuration also, though that is a misfortune we have seldom to deal with in New Orleans. I now always make my incision exactly in the corneal limbus. This not only secures prompt agglutination and healing of the wound by placing it very near the area of blood supply and thereby reduces to a minimum the dangers of prolapse or suppuration, but it also gives a bloodless operation, free from the disadvantage of leakage into the anterior chamber from cut conjunctival vessels. Now, though I always try to make the operation without iridectomy, do not misunderstand me to say that I realize that hope in a majority, perhaps, of my cases. If after delivery of the nucleus there is prolapse or a strong tendency to prolapse which can not be reduced by careful manipulation,

the pupil refusing to become small, central and round I take no risks but at once make a small iridectomy directly upwards. I make an iridectomy also in cases presenting much cortex or a thick capsule that can not be removed without undue violence and that persists in the pupil or tends to present in the wound. Only experience and judgment can teach you how persistent the manipulations to reduce prolapse and to clear the pupil should be, but beginners had best err upon the safe side and perform iridectomy rather than manipulate too long. There is no doubt in my mind that the operation with iridectomy is safer; it prevents prolapse, facilitates cleansing the anterior chamber of cortex and shreds of capsule and should inflammation set in the large area of the coloboma renders complete occlusion of the pupil less likely. The safest of all operations is secured by making a preliminary iridectomy and then extracting after all reaction has passed away and healing is complete. I think it my duty to give patients who have but one eye, and that affected with cataract, the benefit of this method in every case; and in such cases I never operate until the cataract is entirely ripe. By making preliminary iridectomy the surgeon has an opportunity to learn the docility and other peculiarities of his patient and the patient learns that the operation is by no means the dreadful ordeal that he has anticipated, for if the eye be thoroughly cocainized he experiences little and in many cases no pain. As to the lengthening of the period of confinement that has been urged as an objection, I have on the contrary been able to shorten it by this procedure. After iridectomy I never confine the patient to bed and the bandage is only kept on twenty-four hours. Extraction after a preliminary iridectomy can be accomplished so rapidly and smoothly and the pupil be made so clean that there is but little reaction and my patients are never required to stay in bed more than a day. For beginners, with hospital or other patients completely under control, it is far safer to make their first half dozen or so extractions after preliminary iridectomy. In all cases in which I have done the simple operation I remove the bandage at the end of twenty-four hours and at once cocainize and cut away the iris should it have become prolapsed or entangled.

My chief of clinic Dr. Robin is now preparing the patient. You see he washes the eyelids clean with soap and water and

washes out the upper and lower cul-de-sac of the conjunctiva with an abundance of warm normal salt solution, projected with some force from an irrigator resembling a perforated lid-retractor attached to a rubber bulb. Then a little of a 1 to 3000 formol solution is run through the eye and the forehead and scalp are covered with a clean towel. You see that the pupil is well dilated and both eyes have been thoroughly cocaineized. The advantage of cocaineizing the other eye is that the patient can hold it open better and fix it upon this or that point as the operator directs undisturbed by the contact of dust or lint, or of the fingers or instruments. The Lippincott syringe filled with sterilized two grains to the ounce solution of boracic acid is in readiness as there is, as you can perceive, a layer of transparent cortex in front of the opacity and I shall probably have to wash out the anterior chamber. This Graefe knife has been well boiled in boiled water containing a little carbonate of sodium and then laid in 1 to 3000 formol solution; so have all the instruments. Not being ambidextrous I stand on the right side of the patient when operating on the left eye; if I were ambidextrous I would stand behind, as when operating on the right eye. There is some doubt in my mind as to the advantage of being what is called ambidextrous, I doubt if any one ever acquires all the skill in both hands that is acquired by a right-handed man who devotes for a life time all his brain to the training of one. It is a question of division and specialization of labor. Of course every operator on the eye must be in a measure ambidextrous. (Here the operation was done).

In making my incision you see that I involved at least two-fifths, probably more, of the corneal limbus. I regard a small incision as an abomination; it scrapes the nucleus clean of cortex, which is left behind in the chamber, and leads to forcible manipulation and bruising of the wound. Although there was much cortex in this case, by following up the escaping lens closely with the spoon making firm, steady pressure, I managed to squeeze most of it out along with the nucleus. I cut the iris away because it showed such a tendency to prolapse that I knew when I took off the bandage after twenty-four hours I should find it in the wound. It proved an example of the inelastic iris of age that I spoke to you of before the operation. Its inelasticity contributed to the one feature of this operation that I am still dissatisfied with, the slight entan-

glement of the iris at the outer end of the wound. However, I do not think more persistent efforts at reduction are justifiable; if it does not reduce itself completely as the anterior chamber reforms it will be better to make another small iridectomy after complete recovery from this operation. I desist not only because we risk bruising and setting up inflammation of the iris, but because the patient is rather deaf, does not hear my directions very well, and seems to have but little control over the eye; all of which rendered the extraction more laborious than it usually is. There was also a tendency to clinch the eyelids that rendered the iridectomy rather difficult, because my assistant in fixing the eyeball and holding the speculum away from it, so interfered that I had no good resting place for my left hand. Incision of the capsule was by no means easy because the patient could not roll the eye down sufficiently and my cystotome was straight with a rigid stem. It was impossible to introduce it in the usual way directly from above; I had to slip it in sideways from the outer end of the wound in a rather awkward manner. A cystotome ought to have a bend in its stem, or better, have a malleable stem that can be bent to suit the case in hand. Finally, gentlemen, I call your attention to the dressing of the eye. Students are apt to turn away after an operation and neglect to observe the details of dressing, and later when they come to operate themselves they are embarrassed by not knowing exactly what to do with the wound they have just made. First, you see, my assistant again washes out the eye thoroughly with the weak formol solution and instills a drop or two of the atropine. Then a disc of linen wet in the weak formol, or a weak carbolic solution, is laid on each eye, and the orbits are evenly and closely filled with absorbent cotton most carefully arranged to produce slight, firm, even pressure on each eye when the bandage is applied. It should not cause discomfort much less pain but keep the eyelids well closed and so gently restrain the motions of the eyeballs. This depends both upon the care and smoothness with which you have arranged the cotton padding and the avenues and closeness with which you apply the bandage. I use a bandage of the best flannel, on account of its elasticity, not too wide. One turn goes around the forehead and occiput and the next comes up under the ear on the side of the eye operated on. This is the all-important turn; the

lower edge of the bandage must completely cover and include every particle of the lower edge of the cotton pad as the bandage passes over the other ear. If you leave any cotton sticking out below the edge of the bandage you will find by next morning that the whole pad has worked itself out on the cheek; for this reason the lower edge of the bandage should turn up and in to the skin forming a little loop or pocket holding the lower edge of the cotton pad. Over the flannel bandage a moist mosquito-bar (bobbin) bandage is placed but not too tightly. As the gum in it dries this bandage "sets" and encloses both eyes and the head as snugly and firmly as if done up in plaster or liquid glass. I know that many of our best men have discarded bandages and now simply close the lids with plaster, but many unfortunate accidents have left me a devotee to this dressing. If well applied, no matter how restless the patient may be, it remains snugly in place for twenty-four to forty-eight hours; it thoroughly protects the eye from a chance blow against furniture or the hand in sleep, by which I have seen many an eye lost, especially in hospital patients, and more particularly negroes; should the patient disregard instructions and attempt to pull at the dressing it will take him a long time so to disarrange this bandage as to inflict injury upon himself, and the attendant will probably catch him at it before any damage can be done; both eyes being closed and the lids kept down the eyes rest quietly, are not rolled about; the tears drain away freely and together with any mucus are absorbed by the dressing; it is aseptic and antiseptic so far as may be with the eye communicating with the outer world through the nasal duct. Theoretically the closure of the eye by a strip of plaster is all sufficient, but such a dressing affords no protection and even if a nurse be constantly employed a chance movement of the hand, or a momentary unseen or unforeseen indiscretion on the part of the patient and an eye is lost forever. How often have I had cause to deplore it! If I kept my patients long tied up and confined to bed I would certainly risk the adhesive strip across the lids, but I do not. In twenty-four hours after the simple operation so that I can clip off a prolapse should it have occurred, or in forty eight hours after an operation, I remove the bandage, inspect the eye, introduce carefully a few drops of borax and camphor water and a drop of atropine and put on a firmly

bound "cataract cage." Should the wound not be closed, however, I remove if necessary, under cocaine, any iris, capsule or cortex that may be interfering with closure and apply the bandage for another day. Only in cases in which there has been much loss of vitreous or serious accident do I keep a patient in bed longer than twenty-four hours and never longer than two days. At the end of twenty-four hours the patient sits up in a comfortable chair with the cataract cages on. I feel confident that there has been great exaggeration in our ideas of the necessity of confinement to bed after cataract extraction. I have often operated here (at the hospital) and allowed my patient to go home the next day and one of the quickest and best results I ever had was in a negro who had to ride a long way in the cars and walk several miles the same morning that the extraction was made. Of course I was able to bandage one eye only, but when the bandage was removed next morning after the same long walk and ride the wound was sealed and the reaction was scarcely perceptible. In a week the man was back at his work, ditching. It is very seldom we keep a patient in the hospital longer than a week; never unless some complication arises. This is not a thing of indifference by any means in these old people. They do not stand confinement to the bed and house well or the loss of their usual exercise and breaking up of long-grown habits. Hypostatic pneumonia and traumatic delirium are common enough and they lose appetite and power to sleep and run down into an alarming condition with surprising ease. Hence I let them out of bed at the end of the first day, and, unless there be very serious objection, out of the house in a week. It is my custom to direct the nurse to give enough paregoric, by teaspoonful doses, the first night, to ensure a good, quiet sleep, otherwise these old people are apt to be wakeful, fretful, excited, sometimes a little delirious. The paregoric ensures rest, insures against accidents, keeps the bowels quiet a day or two and does no harm; does not even nauseate, for a teaspoonful every half-hour, till three or four are taken, is nearly always all that is required. If this patient is comfortable, has had no serious pain in the eye, when I come to-morrow she shall get out of bed, but I shall not probably take off the bandage until day-after-to-morrow, because, since I have done an iridectomy there can not be anything to do and it will ensure the

wound being well agglutinated to have it undisturbed the full forty-eight hours.

This, too, is a case of cataract, but it differs from the other. This is a man who has a partial cataract in both eyes, or rather, he had immature cataract in both eyes. As they seemed to be very stationary and both cataracts had become sufficiently ripe greatly to interfere with his power to support himself, to do any useful work, we decided to ripen the right cataract artificially, in the method we have been trying here of late, by needling or discinding the anterior capsule. This we did two weeks ago. Although the man is about 55 or 56 years of age; soft cortex in considerable amount came farward into the anterior chamber; and while we have had him under observation there is no doubt that a good deal of this cortex has been absorbed, but to-day the eye presents a condition of beginning irritation, and we believe it is not well to delay extraction any longer. All the ripening that can be done by admitting the aqueous humor into the lens has been accomplished. The only thing we could do further would be to break up the lens completely in an endeavor to have it completely absorbed, but that is out of the question in a man of his age. We escaped unexpect-  
from the use of the syringe in the other case, but I shall be surprised if we do not have to use it in this one, for we are sure there are large quantities of half opaque cortex floating around in the anterior chamber, and I have no doubt a large portion will adhere to the capsule and we will not be able to remove it by ordinary force with instruments, so we will have the Lippincott syringe ready. (Here the operation was done).

There was a shallow anterior chamber in this case, so shallow I had to worm my knife along the upper part of it in order to get between the iris and the lens. That is by no means easy. The prolapse, too, was so very big I had to do an iridectomy, as in the other, and we were disappointed again about using the syringe. The eye was so tense, and in worming my knife along the upper part of the anterior chamber I had to make so extensive a section that all the soft part of the cortex squirted out with the aqueous humor. The aqueous humor acted like the stream from a force pump, and we did not have to use the Lippincott syringe after all. This ought to give a very pretty result. I see that both angles of the iris

seem to have come well down into the anterior chamber. On account of the way I had to make it, this has amounted to almost a linear incision; it has almost no curve to it at all. I had to enter and to come out of the anterior chamber obliquely, and the consequence has been that when I cut out I made the incision that von Graefe advocated in trying to get rid of the danger of corneal suppuration. The eye will now be dressed in the same manner as the other and the patient put to bed for twenty-four hours.

[*NOTE.*—The ultimate result was good in both cases. The man in whom the cataract was artificially ripened by discussion of the capsule had vision of  $\frac{20}{xx}$  when glasses were finally adjusted.]

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Here I have two more cases of cataract to show you, but of an entirely different kind. These are cataracts that we have made ourselves. When these patients came here neither had cataracts and we deliberately made them in their eyes. Their trouble was extreme near-sightedness. This patient had a fairly good eye on the left side but her right eye was near-sighted about 12 dioptries, so that the glass for her right eye in combination with the mild glass necessary for the left eye would produce a most confusing effect. For you must remember that objects appear very differently through a strong glass than through a weak one and that it is almost impossible for any one to wear glasses of very different strengths before the two eyes. The size of the retinal image is changed with change of strength in the glass. Glasses therefore could not do this patient much good and we explained these difficulties and advised her to have the lens of this eye discinded. By that we mean, have the anterior capsule cut open so that the aqueous can get to the lens substance and gradually dissolve it. This can be done in all persons who are not more than a little over thirty and I have seen it succeed in persons who were beyond middle age. The refractive strength of the natural lens is about twelve dioptries so that if we remove the lens from a normal eye we have to replace it by a glass of this strength, but as this patient is already near-sighted to about this very amount the removal of her lens should make her eye just about perfect for distant vision; provided, of course, that all the structures are perfectly healthy, which, unfortunately,

is seldom the case in high myopia. In performing discussion you plunge a very small sharp needle, or I often use a Graefe knife, through the cornea and lightly scratch the anterior capsule. This has been done twice in this case. At the first operation we made a very small discussion. The first discussion should always be very small; open the capsule only a little, let the aqueous in on the lens substance and find out how the lens and the eye are going to behave. You can open the capsules of some lenses freely and they will hold together well, their consistency is such that they do not ooze through the opening in the capsule; the aqueous humor gets in and the lens becomes opaque very gradually. In other lenses the tendency is to swell very greatly at once, pressing against the iris and ciliary body, the cortical substance exuding through the cut and getting into the anterior chamber, irritating by its presence the cornea and iris. Until you find out how an eye is going to behave, therefore, you should be cautious, for the irritation and inflammation caused by rash discussion may bring the eye into a critical condition. This patient had but little reaction after the first operation; the eye flushed up and was painful for a day or two but it soon passed off and we felt justified in making a larger and freer cut. This is the result. You see that there is cortex in the anterior chamber and if you look obliquely you will see more of the soft cortical substance welling forward to take the place of that which has been absorbed. The process is proceeding perfectly safely, there is no irritation; the eye is not flushed and causes no pain. All will turn out well if we are not in too great a hurry, but if we become impatient, stir the eye up with the needle too soon again, or should we be tempted to make an incision in the cornea to spoon or wash out the cortical substance, we may get into great difficulties.

The first case of this sort we ever had here was a little girl about 12 years of age, and who was doing very well, just as this patient is doing; even better, for she was younger, and the younger the better in this operation. Unfortunately, my assistant thought he could hurry along the process and when the eye was just about in the condition of the one I have shown you he opened the anterior chamber and tried to wash out the cortex with the Lippincott syringe. He was not very experienced in the use of the instrument and let the nozzle turn back

from the cornea a moment—that moment was enough. It ruptured the zonula and the vitreous began coming out together with the cortical substance. Of course the operation had to be discontinued at once and the eye bound up. A very serious reaction followed and the child passed into my hands. I worked over that eye for more than a year and a half trying to get good vision. I made three distinct iridotomies. The last was successful and gave her vision,—good vision, because whereas she formerly had about 18 or 20 dioptries of myopia, now it is very slight and she can see quite well at a distance even without any glass. If the doctor had been a little more patient he would have obtained the same result, the eye would not have been deformed, and the child would have been spared much suffering, for some of these iridotomies were so painful, that we had to give chloroform. The whole anterior chamber is deformed, the pupil triangular and eccentric. If an eye is going into a state of active inflammation, if it is painful and troublesome, that does not prevent opening the anterior chamber and removing the cortex. On the contrary, it is the cortex swelling and pressing upon the iris and ciliary body which causes the trouble, and at all hazards you must get it out either with a Daviel's spoon or by washing it out with Lippincott's syringe; but when the eye is doing perfectly well it is safer to leave the anterior chamber closed. Whenever you open the anterior chamber you risk infection and other accidents. We can open the abdominal cavity with safety in a large number of cases but every now and then someone loses his life; so we can open the anterior chamber very many times with no ill consequences, but every now and then an eye is lost. We must remember too that a near-sighted eye is one likely to have an extremely soft or even fluid vitreous and therefore the risk is greater in such cases. It is incomparably better to take a very long time and achieve a satisfactory result than to be quicker and lose even one eye out of a hundred.

Here is the other cataract that we have made. This is a case of precisely the same nature. She is myopic to a very extreme degree in both eyes. In her right eye vision is  $\frac{5}{100}$ , and in the left eye  $\frac{15}{100}$ . Her right eye you see is much worse than her left. We advised her that as the glasses she would have to wear would be thick and heavy and the vision they would give probably but little satisfactory, it would be better

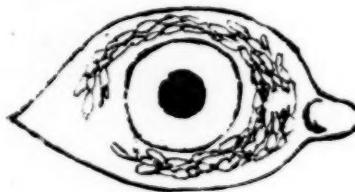
to have the lens removed from the worse eye. We naturally preferred to operate on the worse eye first. When she sees how much she is benefited she will probably wish the other one operated upon also. This you know is a comparatively modern procedure that has been pushed to success by the Germans, and I believe, the case of the little girl of whom I spoke, was the first operation of the kind done in the South. By the South, I mean south of Washington. I do not recollect seeing any reported in the journals. If you look at this eye well you will see in the anterior chamber some loose cortex, quite thin, evidently being absorbed, and behind it a rather thin layer of opaque material composed of the capsule and the rest of the cortical matter locked up in the sac formed by the capsule more or less securely. Of course that is going to be very slowly absorbed and will leave a more or less opaque diaphragm extending across the area of the pupil, and after all the cortex has been absorbed, and there is not the faintest sign of irritation about the eye, we will have to perform discussion upon it. We shall probably do this by the somerset operation (see this Journal of December, 1897) with the Graefe knife, that I have already described to you. Perhaps we shall find the diaphragm so tough that it will be better to use two needles for fear of dragging upon the ciliary processes. In this method one needle is first plunged through the cornea a short distance within its margin and then run through the diaphragm; a second needle is passed through the opposite side of the cornea, at about the same distance from the margin, then through the same hole in the diaphragm that was made by the first needle; now by approaching the handles of the needles their points are widely separated and the diaphragm torn without any injurious pull upon the ciliary region. It is very important not to disturb this critical region of the eye and set up an irido-cyclitis for this is not only a very painful inflammation but it is the inflammation of the anterior part of the eye that has the greatest tendency to cause pouring out of plastic material which will again close up the opening you have just made. These cases have done and are doing so well, however, that I think we will be very careful not to jeopardize their success by anything rash.

[NOTE.—August 20, 1897. Both cases gave entirely satisfactory results at an expense of little or no discomfort.]

## A CASE OF ACUTE LYMPHANGIECTASIA OF THE RIGHT BULBAR CONJUNCTIVA IN AN IDIOTIC CHILD.

BY ADOLF ALT, M.D., ST. LOUIS, MO.

PATIENT, D., aged 13 years, an idiotic girl, was brought to me with the following history: Ten days ago, in the morning, no injury of any kind preceding, a small reddish tumor was noticed near the lachrymal caruncle of the right eye, which before had never shown anything abnormal. During the following days this tumefaction had gradually spread till it had almost reached the outer canthus.



When I saw the child, there was an enormous number of lymph vessels dilated by a fluid tinted with blood pigment. The number and size of these dilated lymphatics was largest near the caruncle. The lymphangiectasia formed almost a ring around and some distance from the periphery of the cornea (see Figure) open only near the outer canthus. There were some punctiform haemorrhages in the conjunctival tissue between the ectatic lymph vessels.

Vision was normal. The lower retinal vein was very broad and tortuous.

Under massage and hot bathing the ectasia began to grow less after three days, the swelling first receding near the lachrymal caruncle, the point from which it had started. When she left for home, a few days later, the swelling was considerably reduced.

The bloody appearance of the lymph contained in the ectatic lymphatics was very much less pronounced on the second day of my observation of the case and in a few days more, the lymph had only a slightly yellowish tint. There must evidently have been a haemorrhage into the conjunctiva (as is, I hear, often observed in idiots) which in this particular case entered and spread into the lymph vessels only, without general diffusion into the conjunctival tissue.

The case seemed to me particularly interesting as it showed *in vivo* a beautiful injection of the conjunctival lymph vessels.

Waldeyer (Graefe and Saemisch, Vol. I, 248) says: "The lymphatic capillaries of the conjunctiva sclerae form a network of very much larger trunks (than those of the limbus cornea). Four or five millimeters distant from the corneal margin they run parallel with each other, and form larger trunks with valves which run towards the inner and outer canthus. They lie beneath the finest capillaries."

This description tallies pretty well with the appearances in the case under consideration, although it looks as if the larger and largest trunks were situated near the lachrymal caruncle.

## CLINICAL MEMORANDA.

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### OPHTHALMIC CLINICAL NOTES.

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BY DAVID WEBSTER, M.D., NEW YORK.

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CASE I. EXTRACTION OF THE REMAINS OF A MOSTLY ABSORBED, TRAUMATIC CATARACT.—Judson H. M., aged 29 years, lawyer, entered the Manhattan Eye and Ear Hospital on November 25, 1890, with the following history: He received the first of a series of injuries to his right eye some fifteen or sixteen years ago by getting a blow upon it with a corn-cob. He lost the sight of it entirely for a few days, but finally came out with some vision, though a cataract formed soon after. Three years later, he was struck in the same eye with a horse-chestnut which caused a "heavy inflammation," but he got over it with about the same amount of vision that he had before getting it injured the second time. Two years after that he was struck in the same eye by a snow-ball and this, also, caused a "heavy inflammation." An ophthalmic surgeon in Albany treated him for this injury and the eye recovered in apparently as good condition as before the blow. Six months later the eye was injured a fourth time by being struck with a tin can, but escaped with but little inflammation. Three years later, in 1883, he contracted a severe cold which was followed by an iritis of the oft-injured eye. Under skillful treatment he recovered from this attack in about a month. Three years after that, in 1886, he had an attack of rheumatism which confined him to his bed for three months. This was followed by an attack of iritis in the left eye from which he did not recover for three months. In 1889 he had a slight attack of inflammation in the right eye, but recovered in a few days. Three weeks ago he had another attack of inflammation in the right eye which caused him to seek my advice. This attack passed off, under instillations of atropine and cocaine, in less than a week. When I saw him his left eye was normal and had vision =  $\frac{10}{xx}$ . The right eye presented an irregular pupil, blocked with the degenerated, membranous remains of a partially absorbed cataract. It showed an iridodonesis, or tremulousness of the iris on moving the eye, which

was probably due to a fluid vitreous. But there was not only perception of light but the projection was perfect, showing that the retina and optic nerve were intact. To obviate his repeated attacks of iritis and to give him what sight the eye was capable of, I proposed to extract the shriveled remains of his cataract. Accordingly, the eye was cocainized and washed with a saturated solution of boric acid. The eyelids were held open by a spring speculum. With fixation forceps I seized the conjunctiva close to the cornea at its infero-nasal margin, so as to steady the eyeball, and to a certain extent, to control its movements. I then made an incision through the cornea, about a line from its temporal margin, with an iridectomy knife, or angular keratome. The knife being withdrawn, the aqueous humor followed it, and the membrane was pushed forward by the vitreous humor until it was almost in contact with the posterior surface of the cornea. I then introduced a delicate, sharp hook and made two attempts to catch the membrane and pull it out of the eye. Both of these attempts failed because of the brittleness of the membrane. It was not tough enough to hold on to the hook. I then resorted to the iris forceps and to Daniel's cataract spoon, and succeeded in getting the cataractic remains out of the eye piecemeal. There were six pieces in all. The pupil was left almost entirely clear. The eye was again washed with the aseptic solution and both were bandaged and the patient put to bed.

November 27. The patient has rested quietly since the operation. The eye was opened for the first time this morning, about forty hours after the operation. There is no inflammatory reaction. A small piece of the membrane remains but does not obstruct the pupil. The eye is to have atropine instilled thrice daily.

December 1. The pupil is moderately dilated and circular. Vision =  $^{20}/_{XXX}$  with + 7 D.  $\bigcirc + 3$  D. c. ax.  $105^\circ$ .

December 24. The eye seeming sufficiently well, the patient was discharged with vision =  $^{20}/_{XL}$  with + 6.50 D. s.  $\bigcirc + 3.25$  D. c. ax.  $115^\circ$ .

January 30, 1891. Right eye, vision =  $^{20}/_{XXX}$  with + 8 D. s.  $\bigcirc + 1$  D. c. ax.  $90^\circ$ .

March 30. The patient has crossed diplopia. Prism  $14^\circ$  base to nose and prism  $2^\circ$  base down over right eye fuses the double images.

A tenotomy of the right *externus* was suggested but the patient seemed to be satisfied with his condition and we did not see him again. It is interesting to note the gradual clearing up of the vision and the change of refraction in the operated eye. The astigmatism of three and a quarter dioptres was reduced to one dioptre. The hypermetropia of six and a half dioptres was, meanwhile, increased to eight dioptres. The axis of the cylinder correcting the astigmatism following cataract extractions is almost always horizontal or nearly so. That is, it is parallel to the corneal cut. So it was in this case. The corneal wound was vertical and so was the axis of the cylinder correcting the resulting astigmatism. High degrees of astigmatism resulting from wounds of the cornea always become less and often entirely disappear as the corneal cicatrix becomes firmer and smooth r.

**CASE II. ULCER OF THE CORNEA BENEFITED BY PARACENTESIS.**—James R. C., aged 41 years, came to my clinic November 26, 1890, with an ulcerative keratitis. He gave a history of attacks of inflammation of the right eye occurring at long intervals for the last fourteen years. The first attack occurred fourteen years ago. The second attack was eight years ago. For this attack he applied a "potato poultice" and came very near losing the eye. He had a third attack of a similar character, but less severe, two years ago. The present trouble came on four weeks ago, with lachrymation, photophobia, pain and redness of the eyeball. For the last two nights he has not been able to sleep on account of the pain. Upon inspection we found a ragged ulcer on the infero-nasal quadrant of the cornea with a diffuse opacity, due to infiltration, extending around it. Ophthalmoscopic examination revealed the presence of floating bodies in the vitreous. Vision =  $\frac{1}{cc}$ . Tension of the eyeball greater than normal.

The patient was admitted to a bed in the hospital. The eye was cocainized and washed with Panas' fluid. The operation of paracentesis of the cornea was performed with a Graefe's cataract knife, the eyelids being held open with the fingers of the operator and great care being taken not to touch the anterior capsule of the lens with the point of the knife so as to avoid producing a traumatic cataract. The use of the speculum and fixation forceps should be avoided in such cases as they only render the operation the more painful, because co-

caine fails to render the inflamed conjunctiva anaesthetic. It renders the cornea analgesic and the only pain that follows, when only the fingers and knife are used, is the result of the sudden excavation of the anterior chamber. Atropine was instilled and a bandage applied over both eyes.

November 27. There has been no pain save that immediately following the operation. The anterior chamber is re-established. To have cleansing and atropine twice a day.

December 1. Ulcer healing rapidly. Less redness and lachrymation.

December 3. Continued improvement. The ulcer is nearly healed. The redness is passing away. Vision =  $\frac{1}{10}$ . The other eye has never been inflamed and has vision =  $\frac{20}{x}$ . Discharged.

It will be observed that when this patient came into the hospital the vision of the inflamed eye was  $\frac{1}{10}$  and that he was discharged with vision  $\frac{1}{10}$ , nine times as much as he came in with. But the healing of a large corneal ulcer always produces a scar, which always constitutes an opacity of the cornea and in the adult causes permanent impairment of the vision.

CASE III. SYPHILITIC IRRITIS OF BOTH EYES.—Joseph McC., aged 21 years, became an in-patient at the Manhattan Eye and Ear Hospital December 15, 1890, on account of an attack of iritis of both eyes. He said that for the last six years he had had attacks of pain over his eyes coming on daily at the same hour for weeks at a time, with occasional intermissions of a week or two. These pains were probably malarial and certainly had very little to do with the present attack. About a week ago both eyes got red and the sight became blurred. Upon inspection we found deep circum-corneal redness, discoloration of the irides and small, dull looking pupils with vision reduced to  $\frac{1}{10}$  in each eye. A diagnosis of iritis was made and was confirmed by the adhesions of the pupillary border of the iris to the anterior capsule of the lens that appeared in both eyes within half an hour after a drop of solution of sulphate of atropia, 1 per cent., had been instilled. Upon inquiry we learned that the patient had contracted syphilis some three months before and this left us no doubt as to the causation. The patient was put to bed with instructions that a slight perspiration be kept up. He was put upon mercurial inunction and was ordered ten grains of iodide of potas-

sium, internally, three times a day. A drop of a 1 per cent. solution of sulphate of atropia was ordered to be dropped into both eyes once every four hours and the eyes were to be bathed with hot water for fifteen minutes every hour.

December 17. Both pupils were well dilated, all the adhesions having been broken up.

December 19. The pupils are not so well dilated. Both eyes are to have atropine dropped into them four times in an hour four times a day.

December 21. Both pupils are widely and evenly dilated. The irides are much improved in color. The circum-corneal redness is much less. As tenderness of the patient's teeth had begun to develop, and as the mercury seemed to have accomplished all that was expected of it the inunction was ordered to be stopped; the bathing with hot water was continued *pro re nata*; the atropine and the iodide were continued as before.

December 25. Both eyes being nearly well, the vision of the right having risen to  $20/xxx$  and of the left to  $20/xL$ , and the redness of the eyeballs having mostly disappeared, the patient was discharged from the wards, medium smoke coquilles were prescribed for him, and he was directed to continue the treatment as an out-patient until entirely well.

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## SOCIETY MEETINGS.

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### PRELIMINARY PROGRAMME OF THE WESTERN OPHTHALMOLOGICAL, OTOLOGICAL, LARYN- GOLOGICAL AND RHINOLOGICAL ASSOCIATION.

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MEETING AT CHICAGO, ILL., APRIL 7 AND 8, 1897.

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Joint morning session at 9 A.M.

Address of Welcome, Dr. E. L. Holmes, Chicago.

Response, Dr. A. Alt, St. Louis.

President's Address, Dr. B. E. Fryer, Kansas City, Mo.

Reception of Guests. Registration of Members.

Reports of Secretary and Treasurer.

Report of Committee on Membership.

Election of Members.

Address (by invitation), Dr. H. Knapp, New York City.

Papers have been arranged for as follows :

#### OPHTHALMOLOGICAL SECTION

- Paper by Dr. H. V. Würdemann, Milwaukee.  
Colored Ophthalmoscopic Picture, by Dr. C. H. Beard, Chicago.  
Paper by Dr. J. Ellis Jennings, St. Louis.  
Paper by Dr. A. C. Corr, Carlinville, Ill.  
Paper by Dr. C. Barck, St. Louis.  
Recent Researches Into the Histo-Pathology of Trachoma, by Dr. A. Alt, St. Louis.  
The Antiseptic Preparation of the Conjunctiva for Cutting Operations on the Eyeball, by Dr. B. E. Fryer, Kansas City, Mo.  
Dacryocystitis—Its Significance and Treatment, by Dr. A. E. Bulson, Jr., Fort Wayne, Ind.  
Four Cases of Parinaud's Conjunctiva, by H. Gifford, Omaha, Neb.  
Paper by Dr. Frank Allport, Chicago.  
Miscellaneous Note From Fifteen Years' Experience in Eye Diseases, by Dr. Barton Pitts, St. Joseph, Mo.  
On the Use of Suprarenal Capsule Extract in Minor Eye Surgery, by J. A. Mullen, Houston, Texas.  
The Science of Ophthalmology, by Dr. Dudley E. Reynolds, Louisville, Ky.  
Use of De Zeng's Refractometer, by Dr. T. A. Woodruff, Chicago.  
Report of a Case of Tumor of the Cerebellum, by Dr. E. W. Helmman, Toledo, Ohio.  
Moot Questions in Refractive work, by Dr. Gradle, Chicago.

#### MICROSCOPICAL AND PATHOLOGICAL.

- Specimen by Dr. Homer M. Thomas, Chicago.  
Dr. Cassius D. Wescott, Chicago.  
Dr. A. Alt, St. Louis.

#### PRESENTATION OF CASES.

- Dr. Cassius D. Wescott, Chicago.  
Dr. Casey A. Wood, Chicago.

#### NEW INSTRUMENTS.

- Dr. C. Barck, St. Louis.  
Dr. J. Ellis Jennings, St. Louis.

Members are requested to notify the Secretary Dr. FRANK M. RUMBOLD, Century Building, St. Louis, Mo., if they desire to read a paper, giving title, and all members are requested to bring, if possible, interesting pathological or microscopical specimens.

Reduced rates have been secured for members attending the meeting and everything indicates a large, profitable and enthusiastic session.

## MISCELLANY.

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### TRACHOMA.

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Trachoma, or, as it is called, "the Egyptian eye disease," a contagious eye disease, which is endemic in the eastern provinces of Prussia, occupied the last meeting of the Berlin Medical Society. Surgeon-General Kirchner, of Königsburg, who read a paper introducing the subject proved by an array of figures the serious dimensions that the epidemic has assumed of late years, and pleaded earnestly for vigorous measures to be taken against it. It is, he says, essentially a filth disease which Russian harvest workmen bring into the eastern provinces year by year, where it finds conditions highly favorable to its spread and continuance amongst a population indolent, poor, dirty, and addicted to drinking. As (where proper precautions are neglected) trachoma is highly infectious, it is not rare to find whole families victims to it, while schools have to be closed when a serious outbreak occurs. Even in the army it disables a great many men, though happily the number has considerably decreased during the last few years, since the inauguration of more stringent hygienic measures. Dr. Kirchner said that from 1873 to 1889 the figures had been:

Of 100,000 men—

2,099	attacked by trachoma in 1st Corps	(East Prussia).
1,649	"	in 2d " (West Prussia).
1,031	"	in 5th " (Posen).
715	"	in 6th " (Silesia).
398	"	in 10th " (Hanover).
245	"	in 9th " (Schleswig - Holstein).

There were no cases to speak of in the rest of the army. Dr. Kirchner summed up by saying that the harm done by the epidemic was three-fold: (1) Education suffers in the attacked provinces, the schools having to be closed from time to time; (2) the population's earnings decreased, as in consequence of

the ensuing gradual contraction of the conjunctiva, and the encroachment of the disease on the cornea, the visual power diminishes until often enough total blindness sets in; and (3) the prevalence of the disease in the army weakens the national power of defense. He strongly advocated the following measures: (a) special trachoma hospitals; (b) special instruction for doctors, as those who come from the western provinces, never having seen the disease, are unskilled in detecting it; (c) gratuitous treatment; (d) periodic examinations of the school children; (e) supervision of the floating population; (f) public instruction of the poorer population by schoolmasters, clergymen, etc., as printed instructions are hardly taken notice of; (g) collection of reliable statistics, and (h) appointment of special medical officials to carry out the above measures, and grants of sufficient funds by the State.

Professor Hirschberg opened the discussion on Dr. Kirchner's paper. He said that two years ago he was commissioned by the Government to report on the prevalence of trachoma in the eastern provinces. He had examined 7,000 persons, and found 10 per cent. of the population affected, 2 per cent. seriously so. In the village schools the number of cases was greater than in the higher class town schools, but even in these latter the number was never below 5 per cent. As regarded Berlin, the disease was brought in frequently, but had never spread, so that many experienced practitioners had never even seen a case of it.—*British Medical Journal*.

## BOOKS AND PAMPHLETS.

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**THE DISEASES AND INJURIES OF THE CONJUNCTIVA, ESPECIALLY SO-CALLED GRANULATED LIDS.** By J. H. THOMPSON, M.D. Hudson-Kimberley Publishing Co., Kansas City, Mo. 1897.

A readable compend on the disease of the conjunctiva, embodying the author's ideas, which in some instances are at variance with what is generally accepted as correct. The rules as to treatment are safe and commendable.

## PAMPHLETS.

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"Water Purification," by C. G. Currier, M.D.

"What are Muscae Volitantes?" by F. P. Pratt, M.D.

"Bilateral Syphilitic Ulceration of the Auricle," by M. A. Goldstein, M.D.

"Advanced Method in Teaching the Deaf," by M. A. Goldstein, M.D.

"Some Methods in the Treatment of Nasal Troubles," by J. C. Montgomery, M.D.

"Shall We Operate Through the Upper and Lower Canaliculus?" by S. C. Ayres, M.D.

"Sixth Annual Report of the Charity Eye, Ear and Throat Hospital of Erie County, 1897."

"Twenty-Eighth Annual Report of the New York Ophthalmic and Aural Institute, 1897."

"Melanosarcoma of the Conjunctiva, With the Report of a Case," by A. R. Baker, M.D.

"The Texas Screw-Worm and Its Invasion of the Nasal Cavities," by M. A. Goldstein, M.D.

"What are the Functions of the Rods and Cones and the Pigment Epithelium Layer of the Human Retina?" by F. P. Pratt, M.D.

"Two Cases of Opening of the Lateral Sinus for Infective Thrombosis, With a Table of Operations Performed Previous to 1897," by C. Barck, M.D.